REMARKS

Claims 1, 5, 12 and 22 have been amended. Claims 1-22 remain in the application. Reexamination and reconsideration of the application, as amended, are respectfully requested.

Claims 1-22 were rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The Examiner stated:

> "Independent claims 1, 12, and 22 each recite 'each of the discrete multiple time-delayed output beams is individually weightable in complex amplitude' in the claims. Examiner respectfully notes that Applicants' specification does not specifically disclose anything about weighting beams in complex amplitude. Although Applicants' accompanying remarks cite paragraphs 22, 39, 43, and 45 of the specification for providing support for this newly added limitation, Examiner respectfully notes that Applicants' specification describes certain attributes of the beams in Applicants invention but does not disclose or describe a connection between those attributes and any weighting or "weightability" of the beams. Furthermore, although Applicants have cited US 6,608,721 B1 in their remarks, Examiner respectfully notes that Applicants' specification does not incorporate the disclosure of this patent by reference (or show any intent to incorporate it by reference), and therefore, any discussion of weighting contained in US 6,608,721 B 1 is not considered with regard to the written description requirement of the instant application."

This rejection is respectfully traversed.

Representative claim 1, as amended, recites a system in which each of the discrete multiple time-delayed output beams is individually weightable in complex amplitude. The application describes this feature of the invention in a manner that reasonably conveys to a skilled person that the inventors, at the time the application was filed, had full possession of this feature.

A skilled person would understand the term "complex amplitude" to mean "amplitude and phase." As originally filed, claim 1 recites that the output beams are "mutually phase-shifted."

Paragraph 38 describes the coating 120 as "partially reflective." Paragraph 39 describes the coating 120 as "spatially varying." Consequently, a skilled person would understand that the transmitted beams (i.e., the parts that are not reflected) are clearly "individually weighted in amplitude." Further, a skilled person would understand that all reflection is inherently a complex-valued function. (That is, a skilled person would understand that all reflecting of light or passing of light from one medium to another generally involves a modification of all four parameters of a lightwave: amplitude, phase, polarization and direction of propagation. It is only under very

circumscribed conditions that such a transition can occur in which any one, let alone all four, are not altered. Therefore, because of this, and because in this context the phrase "complex amplitude" is synonymous with "amplitude and phase", a skilled person would recognize that virtually all reflections or transmissions of light alter its complex amplitude.) Consequently, a skilled person would understand that the transmitted beams are "individually weighted in complex amplitude," as recited in amended claim 1 (for example).

Compliance with the written description requirement does not require the explicit recitation of the terms "weighting" or "weightability" in the original application. To satisfy the written description requirement, the original application is not required to provide *in haec verba* support for the claimed subject matter. Rather, the application must convey with reasonable clarity to those skilled in the art that the inventor was in possession of the invention. Stated somewhat differently, one skilled in the art, reading the original application, must immediately discern the limitation at issue in the claims. Purdue Pharma L.P. v. Faulding Inc., 230 F.3d 1320, 56 USPQ2d 1481 (Fed. Cir. 2000).

The present application meets this requirement. The original application conveys with reasonable clarity to those skilled in the art that the inventor was in possession of a system in which each of the discrete multiple time-delayed output beams is individually weightable in complex amplitude. Paragraphs 22, 38, 39, 43, and 45 of the specification, together with the originally filed claims, provide support for this limitation. USP 6,608,721, filed October 13, 2000, corroborates the level or ordinary skill in the art at the time the present application was filed. USP 6,608,721 corroborates that, at the time the present application was filed, people skilled in the art would understand the present specification as teaching discrete multiple time-delayed output beams that are individually weightable in complex amplitude.

It is therefore respectfully submitted that claims 1-22 are in compliance with the requirements of 35 U.S.C. 112, first paragraph.

Claims 1-22 were rejected under 35 U.S.C. 103 (a) as being unpatentable over Shirasaki (US 5,999,320 A) in view of Kessler et al. (US 6,434,291 B1) and in some cases in combination with Taga. These rejections are respectfully traversed with respect to claims 1-22, as amended.

The present invention, as defined by the amended claims, is directed to a system comprising a number of elements in combination. In amended claim 1, for example, the system comprises a combination including a processor to process at least one collimated input beam to produce discrete multiple time-delayed output beams that interfere at a plane. The discrete multiple time-delayed output beams are mutually phase-shifted and spatially distributed such that each of the discrete multiple time-delayed output beams occupies a discretely different region and each of the discrete multiple time-delayed output beams is individually weightable in complex amplitude. A similar combination is neither disclosed nor suggested in any of the cited references.

With respect to Shirasaki, the Examiner stated:

> "Examiner respectfully notes that Shirasaki also discloses discrete multiple time-delayed output beams that interfere at a plane, the beams being spatially distributed such that each occupies a different regions (Figures 13 and 14; column 11, lines 32-67; column 12, lines 1-67), as recited in Applicants' claims. Examiner respectfully notes that, as well as the claim may be understood with respect to 35 U.S.C. 112, first paragraph, discussed above, the beams disclosed by Shirasaki are also "able" to be individually weighted in complex amplitude, since Shirasaki discloses discrete multiple time-delayed output beams which are collimated and occupy different regions (similar to Applicants' beams). Although Applicants' accompanying remarks cite paragraphs 22, 39, 43, and 45 of the specification, Examiner respectfully notes that Applicants' specification describes certain attributes of the beams in Applicants invention but does not further disclose or describe a connection between those attributes and any weighting or "weightability" of the beams."

Applicants respectfully disagree with the above-quoted characterization of Shirasaki.

First, Applicants respectfully disagree with the characterization that, since Shirasaki discloses discrete multiple time-delayed output beams which are collimated and occupy different regions, the beams in Shirasaki are able to be individually weighted in complex amplitude. Applicants submit that the beams disclosed in Shirasaki are NOT able to be individually weighted in complex amplitude (as in the present invention) because Shirasaki fails to disclose beams that are sufficiently distinct to allow individual weighting. The claims have been amended to emphasize that in the present invention the beams are spatially distributed such that each of the discrete multiple time-delayed output beams occupies a discretely different region. The claims, as amended, thereby define the degree of distinctness that the beams must have to be "independently weighted." A similar degree of distinctness is neither disclosed nor suggested in Shirasaki.

Second, Applicants respectfully disagree with the characterization that, since Shirasaki discloses discrete multiple time-delayed output beams which are collimated, the beams in Shirasaki are able to be individually weighted in complex amplitude. Applicants submit that there is no disclosure or suggestion in Shirasaki of input beams that are collimated, as in the present invention. Shirasaki states in the description of Figures 6, 7, 8, 9, 10, 11, 13, and 14 (see column 5 line 37, column 6 line 38, column 7 line 28+, column 8 line 34, column 9 line 7, column 10 line 42, column 11 line 40+, column 12 line 43) that the "input light is focused into a line" (or "... into a focal line"). A focused line is not a collimated beam. Webster's dictionary defines a "collimated" beam as one in which the light rays are parallel. In Shirasaki, the input light is focused to a line. Consequently, the rays converge to the line and then diverge from the line or, in Shirasaki's words, "radially propagates from (the) focal line" (column 5 line 40, and others). In fact, in the description of Figure 14, Shirasaki clarifies that distinction by stating: "Therefore, a collimating lens 142 converts light 138 into parallel light. The parallel light is then collected by a cylindrical lens 144 and focused into a focal line 146" (column 12 lines 40-43). If the input to Shirasaki's device is "focused" from a collimated beam, it is no longer collimated.

Shirasaki does state (at column 5 line 41) that "Wavelength splitter 78 then outputs a luminous flux 82 of collimated light, where the output angle of luminous flux 82 changes as the wavelength of input light 77 changes". However, this is not a teaching or suggestion of a collimated input beam, as in the present invention. This is, instead, a completely different statement about a different part of the device. In this statement, Shirasaki is referring to the output of the splitter, not the input, and the flux is collimated only at a single wavelength, with flux at other wavelengths traveling along rays at different angles. In short, this is a statement about a light beam with various wavelengths in the input, and, hence, the output will not be overall collimated at the output, but rather will occupy a variety of ray angles. Thus, Shirasaki's use of the word "collimated" in this context does not teach or suggest that the input light is collimated. Nor is the entirety of Shirasaki's output light collimated, just individual wavelengths of the output light.

Consequently, neither Shirasaki nor any other reference discloses a processor to process a collimated input beam to produce discrete multiple time-delayed output beams that interfere at a plane. Neither Shirasaki nor any other reference discloses discrete multiple time-delayed output

beams being spatially distributed such that each of the discrete multiple time-delayed output beams occupies a discretely different region and each of the discrete multiple time-delayed output beams is individually weightable in complex amplitude.

With respect to claim 5, the Examiner stated:

> "Regarding claim 5 in particular, Examiner respectfully notes that Kessler et al. also teach a subsystem including two mirrors, at least one of the two mirrors having at least one hole as recited in newly amended claim 5. In response to Applicants' argument that the references fail to show certain features of Applicants' invention, it is noted that the features upon which Applicants rely (i. e., "two OTDL channels" or further features shown in Applicants' Figure 7, as mentioned in Applicants' response on page 10) are not recited in the rejected claim(s)."

This rejection is respectfully traversed with respect to claim 5, as amended. Claim 5 has been amended to recite the system of claim 1, further comprising a first mirror having at least one hole, a second mirror having at least one hole, the first mirror and the second mirror being mutually arranged such that the hole in the first mirror enables light to exit as a dropped wavelength and the hole in the second mirror enables light to enter as an added wavelength. A similar system is neither disclosed nor suggested in any of the cited references. Kessler discloses a device which necessarily requires a circulator in order to provide both drop and add at each port. In contrast, the device defined by claim 5 (one example of which is illustrated in Figure 7) permits add/drop operation without a circulator.

In view of the above, each of the presently pending claims in this application is believed to be in immediate condition for allowance. Accordingly, the Examiner is respectfully requested to withdraw the outstanding rejection of the claims and to pass this application to issue. If it is determined that a telephone conference would expedite the prosecution of this application, the Examiner is invited to telephone the undersigned at the number given below.

In the event the U.S. Patent and Trademark office determines that an extension and/or other relief is required, applicant petitions for any required relief including extensions of time and authorizes the Commissioner to charge the cost of such petitions and/or other fees due in connection

with the filing of this document to Deposit Account No. 03-1952 referencing docket no. 509622000800.

Dated: January 27, 2006

Respectfully submitted,

By _____

Alex Chartove
Registration No.: 31,942
MORRISON & FOERSTER LLP
1650 Tysons Blvd, Suite 300
McLean, Virginia 22102
(703) 760-7744